

REMARKS

Claims 1 -- 13, 24 and 25 are pending in the current application. Claims 14 -- 23 have been previously canceled. No amendment to the claims is being made in this response.

The Specification has been amended to include the readout circuitry for associating one or more frequencies of light to one or more temperatures of the resonator. Support for this comes from originally filed paragraphs [0016] and [0013] as well as from the Invention Disclosure which is part of the inventor Declaration filed 01/06/2009. The originally filed Claims 1 and 7 contain similar language to the amended Specification. No new matter has been added.

Claim 7 claims an imbedded resistor. This imbedded resistor may be formed of various materials including silicon or polysilicon having a doping additive or other resistive material. In contrast, Claim 8 is limited to an imbedded resistor formed of a metal wire. Therefore, there is a clear differentiation between Claims 7 and 8.

There is no change in inventorship due to the cancellation of claims 14 -- 23.

*Rejection under 35 U.S.C §103*

All of the claims stand rejected under 35 U.S.C. § 103(a) over Eggleton et al. (USP 6,438,277) in view of Rabiei et al. (P. Rabiei, W.H. Steir, C. Zhang, L.R. Dalton, "Polymer Micro-Ring Filters and Modulators", J. Lightwave Tech., Vol.20, No. 11, November 2002, pp. 1968-1975), some claims were rejected in further view of additional references.

The Examiner's contention that memory and microprocessor were not contemplated by the Inventors at the time of the invention which was before November 2000 is simply wrong. Memory devices and microprocessor were well known since the early 1970's. In the previously filed and accepted Inventor's Declaration, particularly

Sections 7 -- 9, the inventor avers that he and his co-inventor envisioned a logic means as part of the invention for hosting a control algorithm and that the logic means would include a memory and processor. Please note that the Specification as filed contained the term "Processor 40". Before November 2000 it was well known for logic devices to contain memory and microprocessors. As amended, the Specification clearly states the readout circuitry for associating frequencies of light with temperature of the photonic resonator.

The invention is a feedback controlled photonic frequency selection circuit capable of selecting a particular frequency of light in a deliberate stepped manner. The Examiner admits that Eggleton "...does not disclose a photonic circuit being capable of selecting a particular frequency of light in a deliberate stepped manner." The recitation of Rabiei et al. was used in each and every one of the obvious rejections as a secondary reference in conjunction with Eggleton et al. and sometimes in view of further other references to show a thermally tuned resonator for adjusting its center wavelength. The Rabiei et al. publication only discloses a prototype of a steady state device where the temperature is controlled to pick off on frequency. There is no feedback loop shown. Applicants' invention predates the Rabiei et al. reference. With removal of the Rabiei et al. reference the present application is allowable.

Claims 1 and 7 are similar to the claims as originally filed and are not new. There is no need for a new search by the Examiner. To re-iterate, the Examiner recognizes the predating of Rabiei et al with respect to any logic device as part of readout circuitry in the invention. Hence the patent application is allowable over the cited prior art.

The Examiner has rejected Claims 1, 3-4, 6-8, 11, 24-25 as being unpatentable over Eggleton et (U.S. Patent No. 6438277), in view of newly cited reference to Rafizadeh et al (D. Rafizadeh, J.P. Zhang, S.C. Hagness, A. Talflove, K. A. Stair, S. T. Ho, R. C. Tiberio, "Temperature tuning of microcavity ring and disk resonators at 1.5  $\mu\text{m}$ ", LEOS Annual Meeting Conference Proceedings, Vol. 2, Nov. 10-13, 1997, pp. 162-163. The publication of Rafizadeh et al. discloses the temperature sensitivity of a microcavity resonator where the wavelength of resonance is measured as the substrate temperature is varied in

increments of 10° Celsius. The disclosure does not show the use of a Kelvin probe across an imbedded resistor nor does it have coupling to a feedback controlled photonic frequency selection circuit capable of selecting a particular frequency of light in a deliberate stepped manner as claimed in the present invention. The rather crude device disclosed by Rafizadeh et al. measures the rudimentary effect of temperature on a microcavity resonator. It has "a thermocouple cemented" directly adjacent to the substrate which only measures temperature and cannot provide substrate temperature control in any manner. It does not have an in-situ heater or any intelligent feedback for associating one or more frequencies of light to one or more temperatures of a photonic resonator.

The suggestion by the Examiner that a combination of Eggleton et al. with Rafizadeh et al. and with Schwindt et al would produce the claimed invention is not plausible. While Schwindt discloses use of a Kelvin probe, a combination of all three references would not form the feedback controlled photonic frequency selection circuit of the present application having logic means in the form of readout circuitry for associating one or more frequencies of light with one or more temperatures of a photonic resonator. Newly cited reference to Rafizadeh et al. does not render the invention obvious.

### *Rejection of Dependent Claims*

The Examiner has rejected Claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Eggleton et al. in view of Rabiei et al and Schwindt et al. as applied to Claims 1, 3-4, 6-8, 11, 24-25 in further view of Heimala et al. With the removal of the Rabiei reference Claim 2 is allowable. Since the logic means in Claim 1 and the logic device in Claim 7 was amended to read along the lines of the invention disclosure predating the Rabiei et al reference, all the claims dependent upon Claims 1 and 7 are also allowable.

Claims 5, 9-10, 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Eggleton et al. in view of Rabiei et al and Schwindt et al. in further view of Koizumi et al. which shows use of an aluminum wire as a temperature sensor. Since Rabiei has been removed as a reference, this rejection is also obviated.

Claim 13 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Eggleton et al. in view of Rabiei et al. and Schwindt et al. in further view of Sorin et al. which shows the use of a look-up table. Since the removal of Rabiei as a reference, this rejection is obviated.

Claims 2 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Eggleton et al. in view of Rafizadeh et al. and Schwindt et al. in further view of Heimala et al. Heimala et al. shows an integrated circuit chip having in situ temperature measurement. Since Rafizadeh is arguably not an invalidating reference, the further disclosure of an integrated circuit chip having in situ temperature does not render obvious the present invention comprising a microprocessor with controlled readout circuitry and a temperature feedback loop.

Claims 5, 9-10, 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Eggleton et al. in view of Rafizadeh et al. and Schwindt et al. in further view of Koizumi et al. Koizumi et al. discloses an aluminum wire used as a temperature sensor. Since Rafizadeh et al. does not show a feedback controlled photonic frequency selection circuit of the present invention comprising a microprocessor with controlled readout circuitry and a temperature feedback loop, these dependent claims are patentable.

Claim 13 was rejected under 35 U.S.C. § 103(a) as unpatentable over Eggleton et al. in view of Rafizadeh et al. and Schwindt et al. in further view of Sorin et al. Sorin et al. shows the use of a lookup table for temperature information for Bragg gratings. Since Rafizadeh et al. does not show a feedback controlled photonic frequency selection circuit comprising a microprocessor with controlled readout circuitry and a temperature feedback loop, this dependent claim is allowable.

CONCLUSION

Since all of the obviousness rejections along with the objection under §112 have been overcome and the requirements contained in the outstanding official action have been fully addressed, it is respectfully submitted that the present application is in condition for allowance and a notice to that effect be issued.

After this amendment only 15 remain out of the 23 previously paid for. Therefore no fees are required. If for any reason fees are deemed necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0130 on behalf of Customer No. 22,500.

Respectfully Submitted,

Dated: November 24, 2009

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